

CLAIMS

1. A method for reducing the quantity of a soybean seed storage protein in soybean seeds comprising:

(a) constructing a chimeric gene comprising:

- 5 (i) a nucleic acid fragment encoding a promoter that is functional in the cells of soybean seeds;
- (ii) a nucleic acid fragment encoding all or a portion of a soybean seed storage protein placed in sense or antisense orientation relative to the promoter of (i); and
- 10 (iii) a transcriptional termination region;

(b) creating a transgenic soybean cell by introducing into a soybean cell the chimeric gene of (a); and

(c) growing the transgenic soybean cells of step (b) under conditions that result in expression of the chimeric gene of step (a)

15 wherein the quantity of one or more members of a class of soybean seed storage protein subunits is reduced when compared to soybeans not containing the chimeric gene of step (a).

2. The method of Claim 1 wherein the soybean seed storage protein is selected from the group consisting of glycinin and β -conglycinin.

20 3. The method of Claim 1 wherein the nucleic acid fragment encoding all or a portion of a soybean seed storage protein is placed in sense orientation relative to the promoter region.

4. The method of Claim 1 wherein the nucleic acid fragment encoding all or a portion of a soybean seed storage protein is placed in antisense orientation relative to the promoter region.

25 5. The method of Claim 4 wherein the nucleic acid fragment encodes the alpha subunit of the β -conglycinin soybean seed storage protein.

6. The method of Claim 1 wherein at least two members of a class of soybean seed storage protein subunits are reduced when compared to soybeans not containing the chimeric gene of step (a).

30 7. A method for simultaneously reducing the expression of two soybean genes comprising:

(a) constructing a chimeric gene comprising:

- 35 (i) a nucleic acid fragment encoding a promoter region from a soybean seed storage protein gene; and
- (ii) a nucleic acid fragment encoding all or a portion of a soybean protein that is not the soybean seed storage protein of (i), said nucleic acid fragment placed in sense

- or antisense orientation relative to the promoter of (i),
and (iii) a transcriptional termination region;
- (b) creating a transgenic soybean seed by introducing into a soybean seed the chimeric gene of (a); and
- 5 (c) growing the transgenic soybean seeds of step (b) under conditions that result in expression of the chimeric gene of step (a)

wherein the quantity of one or more members of a class of soybean seed storage protein subunits and the quantity of the protein encoded by the nucleic acid
10 fragment of (a)(ii) is reduced when compared to soybeans not containing the chimeric gene of step (a).

8. The method of Claim 7 wherein the nucleic acid fragment encoding all or a portion of a soybean protein that is not the soybean seed storage protein of (a)(i) is placed in sense orientation relative to the promoter region.

15 9. The method of Claim 7 wherein the nucleic acid fragment encoding all or a portion of a soybean protein that is not the soybean seed storage protein of (a)(i) is placed in antisense orientation relative to the promoter region.

10. The method of Claim 7 wherein the promoter is derived from the gene encoding the alpha subunit of the β -conglycinin soybean seed storage protein.

20 11. The method of Claim 7 wherein the nucleic acid fragment encoding all or a portion of a soybean protein that is not the soybean seed storage protein of (a)(i) encodes a gene involved in fatty acid biosynthesis.

12. The method of Claim 7 wherein quantity of one or more members of a class of soybean seed storage protein subunits and the quantity of the protein
25 encoded by the nucleic acid fragment of (a)(ii) are reduced when compared to soybeans not containing the chimeric gene of step (a).

13. The method of Claim 7 wherein the quantity of at least two members of a class of soybean seed storage protein subunits are reduced when compared to soybean seeds not containing the chimeric gene of step (a), and wherein the fatty
30 acid profile of soybean seeds containing the chimeric gene of step (a) is altered when compared to soybean seeds not containing the chimeric gene of step (a).

14. A transgenic soybean plant prepared by the method of Claim 1.

15. A transgenic soybean plant prepared by the method of Claim 7.

16. Transgenic seeds derived from plants of Claim 14.

35 17. Transgenic seeds derived from plants of Claim 15.

18. A transgenic soybean plant wherein the quantity of one or more members of a class of soybean seed storage protein subunits is reduced in the seeds of said plant when compared to seeds derived from a non-transgenic soybean plant.

19. Transgenic seeds derived from plants of Claim 18.
20. A transgenic soybean plant wherein
 - (i) the quantity of one or more members of a class of soybean seed storage protein subunits is reduced; and
 - 5 (ii) the oleic acid content relative to the content of other fatty acids is increased in the seeds of said plant when compared to seeds derived from a non-transgenic soybean plant.
21. Transgenic seeds derived from plants of Claim 20.